Lyons Method

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Lyons and Bounds Study

- The TPWD study initiated to determine minimum streamflows needed to support Texas stream fisheries

- Minimum flows should provide necessary flow during critical periods and maintain adequate aquatic habitat.

Texas Water Code

- Since 1985, the Texas Water Code has required the Commission to assess effects of a water use permit on:
  - Existing instream uses
  - Water quality
  - Fish and wildlife habitat
  - Freshwater inflow needs for bays and estuaries

Currently…

- Environmental reviews of water right applications are conducted on a case-by-case basis

- In the absence of site-specific data, TCEQ relies mainly on the Lyons Method and/or 7Q2 value for calculating instream flows

Currently…

Factors that contribute to the requirement of a streamflow restriction include:

- Perennial nature of the stream
- Aquatic life use and biological integrity of the stream
- Water quality issues
- Presence of species of concern
- Recreational uses

Lyons Method

- Based on historical daily gaged flow data
- Period of record
- Ungaged locations
- Method provides for 40% of median monthly flows October – February and 60% March - September

Lyons Method

- Determines minimum flow requirements for habitat protection
- Provides more flow during critical spring and summer months

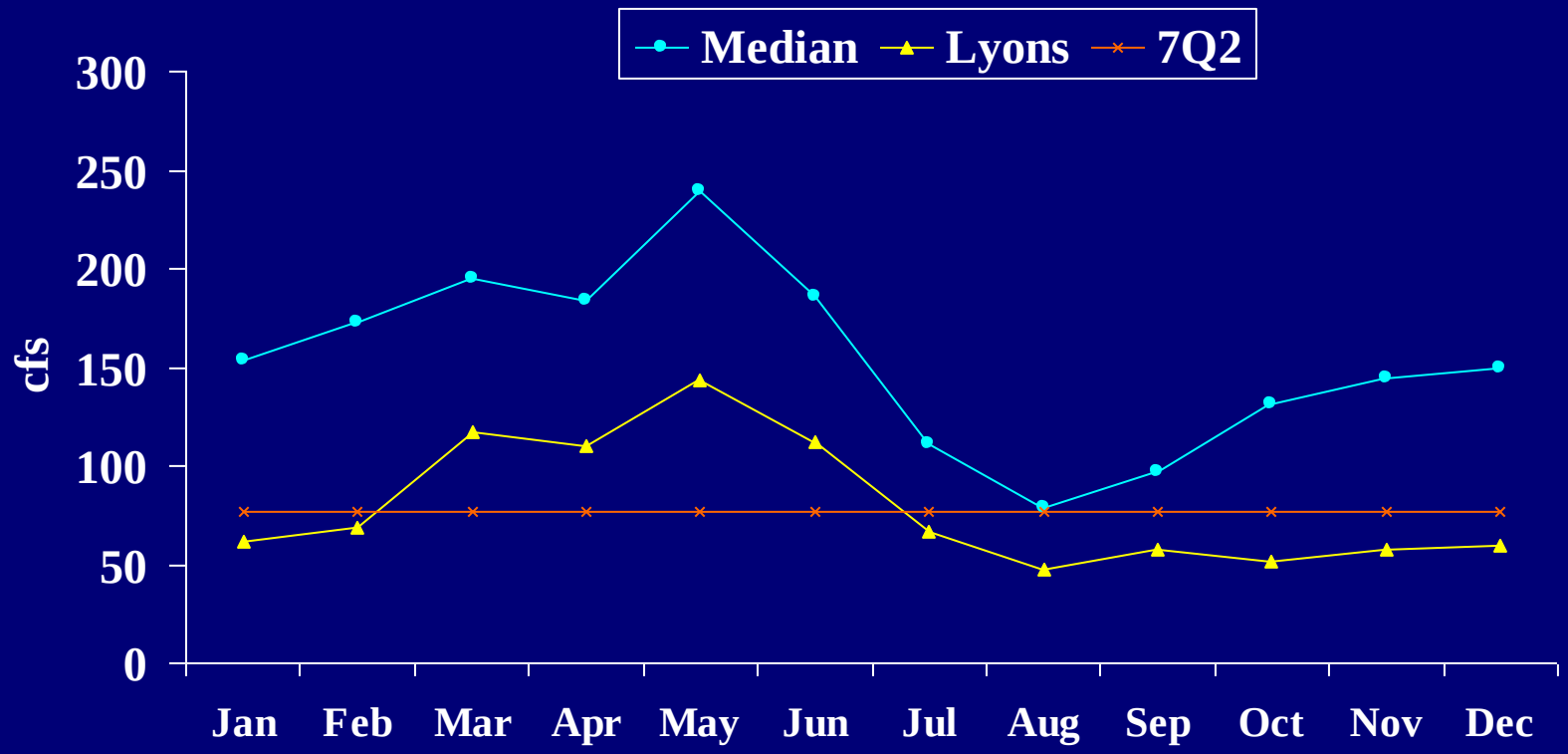
7Q2

- Lowest average streamflow for seven consecutive days with a recurrence interval of two years
- Statistically derived from historical daily gaged flow data
- Minimum flow that would sustain water quality

7Q2

- Low flow value used in water quality modeling for TPDES permitting
- Where the 7Q2 value is greater than the Lyons numbers, 7Q2 is used

Instream Flow Recommendations using Lyons Method and 7Q2 flows



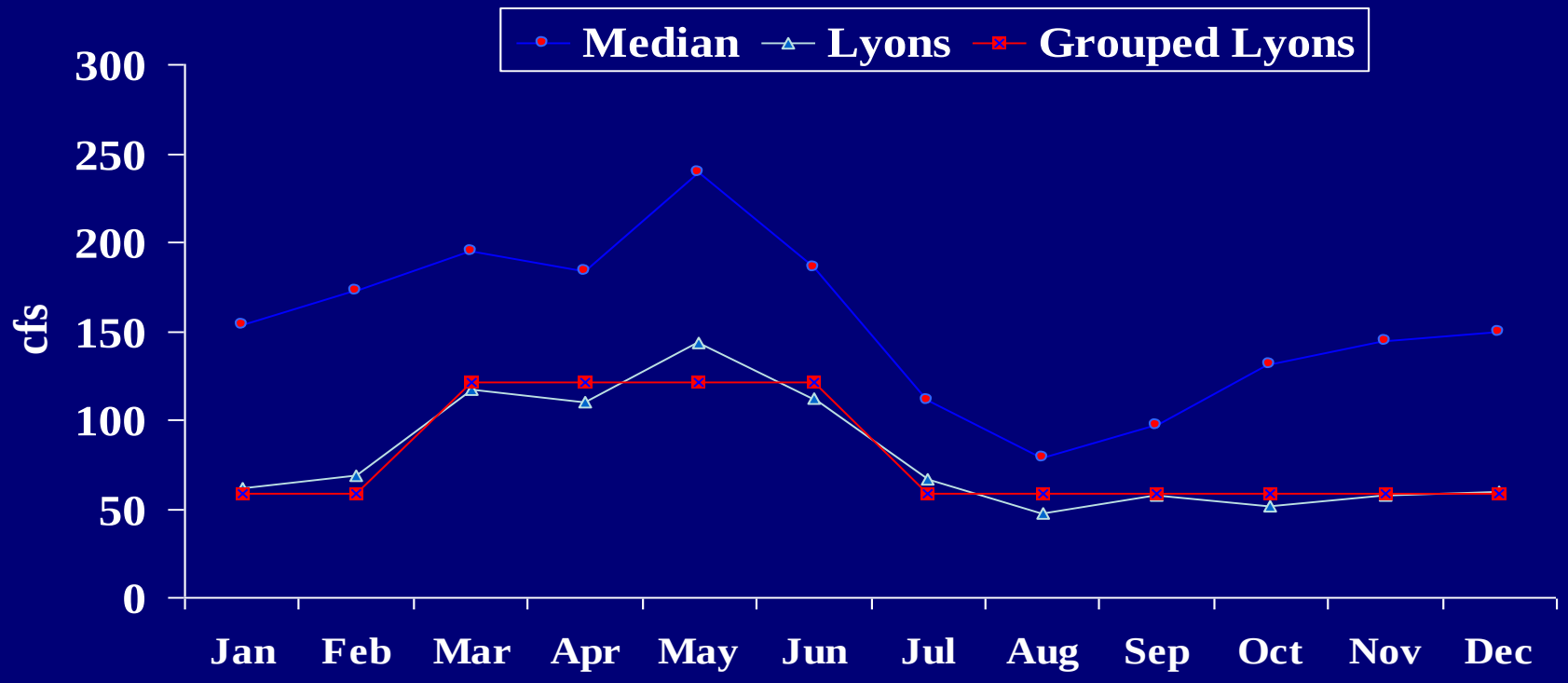
Example of Flow Restriction

"In order to provide sufficient flows for the instream uses of the Green River, diversions of water should be limited to times when streamflow equals or exceeds the following monthly flows at USGS gaging station #08000000:"

Recommended monthly flows (cfs)

Jan	Feb	Mar	Apr	May	Jun	Etc.
11	14	37	40	64	40	Etc.

Instream Flow Recommendations



Lyons Method

121 cfs for Mar-Jun

59 cfs for Jul-Feb

Desktop Review

- Science Advisory Committee report (2006) recommended a review of desk-top methodologies
- TCEQ contracted with scientists (TRG) for a review of Desk-top methods for establishing environmental flows
- Report completed in August 2008.

Lyons Method Advantages

- Simple to estimate flow requirements
- Easy to incorporate into the permitting process
- Easy for the regulated entity or permittee to understand

Lyons Method Disadvantages

- Method established based on extremely limited data and may not be applicable throughout the state
- Limited validation against biological data
- Provides only minimum flows instead of the flow variability now recognized as necessary for ecological integrity

Recommendations from the TRG

- In the absence of further information and for the sake of continuity, continue applying the Lyons Method as a desktop methodology
- Conduct field studies to validate and assess the appropriate spatial boundaries for regional adjustments to the Lyons Method

Contact Information

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